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Serafino Bueti

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DILLON & YUDELL LLP
8911 NORTH CAPITAL OF TEXAS HWY
SUITE 2110
AUSTIN, TX 78759

EXAMINER

LAM, KENNETH T

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. This office action is in response to the amendment filed on 01/02/2008. Claims 1-20 are pending in this application and have been considered below.

Response to Amendment

2. Applicant's arguments filed 01/02/2008 have been fully considered but they are not persuasive. McClennon et al. (McClennon herein after) (US 6,721,355 B1) discloses a method and apparatus for adaptive power management in a modem (i.e., Transceiver). McClennon teaches the claimed invention wherein the modem controls power mode for sending data based upon data size except explicitly teaches adjusting a supply voltage level for sending data. Morishita (US 6,184,744 B1) discloses a relationship such that the power consumption is proportional to the square of the voltage level. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching as taught by Morishita with the adaptive power management as taught by McClennon to obtain same predictable result. The examiner thoroughly reviewed Applicant's arguments but firmly believes that the cited reference reasonably and properly meets the claimed limitation as rejected.

1) **Applicant's arguments:** "McClennon's teachings are related to incoming data traffic, it is not relevant to the claimed adjusting step that is related to data to be transmitted (i.e., outgoing data) ... McClennon's data traffic predictor is designed

to handle incoming data traffic, which is again not relevant to the claimed adjusting step that is related to data to be transmitted (i.e., outgoing data)".

The examiner's response: McClennon discloses a data traffic predictor (Data traffic predictor **120**, Figure 3) which receives transmit user data (Tx user data, Figure 3) to provide a control signal (Tx rate control, Figure 3) for controlling the power mode in a transceiver (DSL Transceiver 20, Figure) for sending data. Therefore, Figure 3 by McClennon discloses the data traffic predictor handles the data to be transmitted.

- 2) **Applicant's arguments:** "Morishita still does not teach or suggest the claimed adjusting step being performed 'in response to an amount of data that needed to be sent by said sender'. Also, the claimed adjusting step involves both increasing and decreasing power supply voltage level, and not just the reduction of power supply voltage, as taught by Morishita".

The examiner's response: McClennon discloses a method and apparatus for adaptive power management in a modem includes increasing and decreasing power level. Morishita discloses a relationship such that the power consumption is proportional to the square of the voltage level. The combined teachings disclose claimed adjusting step involves both increasing and decreasing power supply voltage level. One cannot show nonobviousness by attacking references

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individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The following is a copy of the last office action for reference:

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-4, 11-14, are rejected under 35 U.S.C. 103(a) as being unpatentable over McClennon et al. (McClennon herein after) (US 6,721,355 B1) in view of Morishita (US 6,184,744 B1).

Re Claims 1 and 11, McClennon discloses a method and it's apparatus for managing power consumptions (adaptive power management in a modem, column 1, lines 6-14) of a sending driver (line driver **48**, Figure 1) and a receiving driver (in block **60**, Figure 1), wherein said sending driver sends data received from a sender (DSL Transceiver **20**, Figure 3) to said receiving driver via a transmission line (asymmetric digital subscriber line (ADSL), column 1, lines 16-30), said method comprising:

coupling a sensor (Data Traffic Predictor **120**, Figure 3) to said sender (DSL Transceiver **20**, figure 3) and said sending driver (line driver **48**, Figure 1); in response to an amount of data that needed to be sent by said sender (column 2, lines 39-61), adjusting a power level by said sensor to said sending driver accordingly (column 4, line 43-65, the modem includes a full on power mode, a zero power mode and a quiescent power mode); and transmitting data/ from said sender by said sending driver on said transmission line to said receiving driver according to said adjusted supply voltage level (the power mode of the modem is then determined based on the determined periodicity of the incoming data traffic, column 4, lines 8-18).

McClennon teaches that the modem includes a full on power mode, a zero power mode and a quiescent power mode (column 4, line 43-65) except adjusting a supply voltage level by said sensor to said sending driver accordingly. It is obvious to one skilled in the art at the time the invention was made that the power consumption is proportional to the square of the voltage level, according to Morishita (column 1 lines 17-41), to improve the power regulation and to provide a steady power output.

Re Claims 2 and 12, the combined teaching discloses the method of Claim 1 and it's apparatus of Claim 11, wherein McClennon teaches said method further includes adjusting a transmission frequency (data rate) by said sensor to said sending driver according to said amount of data needed to be sent by said sender (where the quiescent power mode is selected, the method can also include a further step of determining a minimum data rate to which to operate the modem, column 4, lines 25-42).

Re Claims 3 and 13, the combined teaching discloses the method of Claim 2 and it's apparatus of Claim 12, wherein McClennon teaches said method further includes transmitting data from said sender by said sending driver on said transmission line to said receiving driver according to said adjusted transmission frequency (Transceiver **20** in Figure 3 includes sending and receiving driver, column 4 line).

Re Claims 4 and 14, the combined teaching discloses the method of Claim 1 and it's apparatus of Claim 11, wherein McClennon teaches said sensor includes a data level detector (traffic Monitor **122**, figure 4, monitors data arriving at modem **20** to determine a data arrival rate, column 7, lines 50-63).

Re Claims 7 and 17, the combined teaching discloses the method of Claim 1, wherein McClennon teaches said method further includes coupling controller (Power Mode Controller **126**, Figure 4) to said receiving driver (DSL Transceiver **20**, Figure 3).

Re Claims 8 and 18, the combined teaching discloses the method of Claim 7 and its apparatus of Claim 17, wherein McClennon teaches said method further includes adjusting a power level by said controller to said receiving driver according to the power level of data on said transmission line (the power mode of the modem is then determined based on the determined periodicity of the incoming data traffic, column 4, line 16. It is an inherent property that the power consumption is proportional to the square of the voltage level).

McClennon teaches that the modem includes a full on power mode, a zero power mode and a quiescent power mode (column 4, line 43-65) except adjusting a supply voltage level by said sensor to said sending driver accordingly. It is obvious to one skilled in the art at the time the invention was made that the power consumption is proportional to the square of the voltage level, according to Morishita (column 1 lines 17-41), to improve the power regulation and to provide a steady power output.

6. Claims 5-6, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClennon et al. (McClennon herein after) (US 6,721,355 B1) and Morishita (US 6,184,744 B1) as applied to claim 1 and claim 11 above, and further in view of Hanami et al. (Hanami herein after) (US 2003/0133504 A1).

Re Claims 5 and 15, the combined teaching discloses the method of Claim 1 and its apparatus of Claim 11, except wherein said sensor includes a programmable voltage

regulator. However, Hanami teaches a voltage regulator in an integrated circuit capable of reducing power consumption according to data to be processed ([0174]-[0177]).

Re Claims 6 and 16, the combined teaching discloses the method of Claim 1 and it's apparatus of Claim 11, except wherein said sensor includes a clock frequency selector. However, Hanami teaches a clock selector in an integrated circuit capable of reducing power consumption according to data to be processed ([0103]-[0104]).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to included a voltage regulator as taught by Hanami in the power consumption management system taught by McClennon and Morishita to further improve the level of controllability.

7. Claims 10, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClennon et al. (McClennon herein after) (US 6,721,355 B1) and Morishita (US 6,184,744 B1) as applied to claim 7 and claim 17 above, and further in view of Hanami et al. (Hanami herein after) (US 2003/0133504 A1).

Re Claims 10 and 20, the combined teaching discloses the method of Claim 7 and it's apparatus of Claim 17, except wherein said controller includes a programmable voltage regulator. However, Hanami teaches a voltage regulator in an integrated circuit capable of reducing power consumption according to data to be processed ([0174]-[0177]).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to included a voltage regulator as taught by Hanami in the power

consumption management system taught by McClennon and Morishita to further improve the level of controllability.

8. Claims 10, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClennon et al. (McClennon herein after) (US 6,721,355 B1) and Morishita (US 6,184,744 B1) as applied to claim 7 and claim 17 above, and further in view of Borla (US 6,433,730 B1).

Re Claims 9 and 19, the combined teaching discloses the method of Claim 7 and it's apparatus of Claim 17, except wherein said controller includes a pulse amplitude detector. However, Borla teaches using pulse detection for measuring arrival, amplitude, pulse width and amplitude to detect received signal (column 1 line 19 - column 2 line 9).

Therefore, it would be obvious to one skilled in the art at the time the invention was made to incorporate the signal detection method and apparatus as taught by Borla and the frequency detection in the power consumption management system taught by McClennon and Morishita to further improve the accuracy of frequency detection.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENNETH LAM whose telephone number is (571)270-1862. The examiner can normally be reached on Mon - Thu 7:30 am - 5:00 pm EST
ALT Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KENNETH LAM/
Examiner, Art Unit 2611
03/02/2008

/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611